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Genotyping of carbapenem resistant *Acinetobacter baumannii* isolated from tracheal tube discharge of hospitalized patients in intensive care units, Ahvaz, Iran

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ABSTRACT

Background and Objectives: Carbapenem resistant *A. baumannii* is an emerging cause of nosocomial infections. The aims of this study were identification of the most prevalent of carbapenem resistant genes, molecular typing and antimicrobial evaluation of *A.baumannii* in intensive care units.

Materials and Methods: Two hundred and six *A. baumannii* were isolated from tracheal tube discharge of hospitalized patients at different intensive care units in Ahvaz, Iran. Antimicrobial susceptibility test was done on all isolates. Multiplex and singleplex PCR were performed for detection of $bla_{\text{OXA-23-like}}$, $bla_{\text{OXA-24-like,}}$ $bla_{\text{OXA-51-like}}$, $bla_{\text{OXA-58-like}}$, bla_{VIM}, bla_{IMP}, bla_{SPM} and bla_{NDM} genes. Genetic relationship of all isolates was determined by REP-PCR method.

Results: Out of 206 examined isolates, 198 (96.1%) isolates were resistant to imipenem and meropenem. However 3.9% isolates were sensitive to these antibiotics. The $bla_{\text{OXA-23-like}}$ and $bla_{\text{OXA-24-like}}$ genes were detected in 85% and 8.7% of strains, respectively. No $bla_{\text{OXA-58- like}}$, bla_{IMP}, bla_{VIM}, bla_{SPM} and bla_{NDM} were detected. REP-PCR results showed that isolates were belonged to five genotypes: Genotype A was the most prevalent (*P*- value < 0.001): it was observed in 75 of 206 strains (36.4%). Genotype B, and C were found in 28.6% and 27.7%, respectively. The rate of other genotypes was as follows: D (2.4%), E (1%).

Conclusion: Based on the obtained results, the rate of carbapenem resistance was high among of *A. baumannii* which was isolated from intensive care units patients and oxacillinase genes were the most prevalent carbapenem resistant genes. These results revealed that three clones, A, B and C of *A.baumannii* are common in our hospitals.

Keywords: *Acinetobacter baumannii*, Carbapenem resistant, Intensive Care Units

INTRODUCTION

Acinetobacter baumannii has been recognized over the last decades as a major pathogen that responsible for severe infections, especially in the Intensive Care Units (ICU) patients (1, 2). Ventilator-associated pneumonia (VAP) occurs in critically ill patients who admitted to ICU and *A.baumannii* frequently isolated in respiratory specimens of these patients (2, 3). VAP complications are increased mortality rate, prolonged hospitalization and high medical costs (4, 5). Although, previously, most of *A.baumannii* isolates were sensitive to carbapenems, and imipenem was the gold standard treatment for *A.baumannii* pneumonia

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